RBI-Technical Services

BITUMEN CONTENT DETERMINATION OF BITUMINOUS MIX

CLIENT	**Executive Engineer, Byatarayanapura Division, BBMP.**
NAME OF THE WORK	**Improvements to roads in Kempapura Cheluvanarayanaswamy house road in ward no.07, Byatarayanapura.**
AGENCY	Sri. G.N Ramesh
TYPE OF MIX	BM
DATE OF TESTING	19 - 10 - 2017

Vehicle no: KA - 52, 5912

Description	Trail 1	Trail 2
1. Weight of Bitumen mix taken before extraction (W1) gms	500	500
2. Weight of Bitumen mix taken after extraction (W2) gms	483.50	483.50
3. Difference in weight after extraction (W3) gms= (W1-W2)	16.50	16.50
4. Percentage of bitumen in mix = (W3/W1)* 100 (%)	3.30	3.30
5. Average in %	3.30	

RBI-Technical Services
(CONSULTANTS)

Client Representative

Contractor Representative

For RBI - Technical Services

Site Engineer

RBI-Technical Services

BITUMEN CONTENT DETERMINATION OF BITUMINOUS MIX

CLIENT	**Executive Engineer, Byatarayanapura Division, BBMP.**
NAME OF THE WORK	**Improvements to roads in Kempapura Cheluvanarayanaswamy house road in ward no.07, Byatarayanapura.**
AGENCY	Sri. G.N Ramesh
TYPE OF MIX	
DATE OF TESTING	19 - 10 - 2017

Vehicle no: KA-52 1066

Description	Trail 1	Trail 2
1. Weight of Bitumen mix taken before extraction (W1) gms	500	500
2. Weight of Bitumen mix taken after extraction (W2) gms	484.00	483.50
3. Difference in weight after extraction (W3) gms= (W1-W2)	16.00	16.50
4. Percentage of bitumen in mix = (W3/W1)* 100 (%)	3.20	3.30
5. Average in %	3.25	

RBI-Technical Services
(CONSULTANTS)
For RBI - Technical Services
Site Engineer

Client Representative

Contractor Representative

RBI-Technical Services

BITUMEN CONTENT DETERMINATION OF BITUMINOUS MIX

CLIENT	**Executive Engineer, Byatarayanapura Division, BBMP.**
NAME OF THE WORK	**Improvements to roads in Kempapura Cheluvanarayanaswamy house road in ward no.07, Byatarayanapura.**
AGENCY	Sri. G.N Ramesh
TYPE OF MIX	Bm.
DATE OF TESTING	19 - 10 - 2017

Vehicle no: KA - 52 553

Description	Trail 1	Trail 2
1. Weight of Bitumen mix taken before extraction (W1) gms	500	500
2. Weight of Bitumen mix taken after extraction (W2) gms	483.50	483.50
3. Difference in weight after extraction (W3) gms= (W1-W2)	16.50	16.50
4. Percentage of bitumen in mix = (W3/W1)* 100 (%)	3.30	3.30
5. Average in %	3.30	

RBI-Technical Services
(CONSULTANTS)

For RBI - Technical Services

Site Engineer

Client Representative

Contractor Representative

RBI-Technical Services

BITUMEN CONTENT DETERMINATION OF BITUMINOUS MIX

CLIENT	**Executive Engineer, Byatarayanapura Division, BBMP.**
NAME OF THE WORK	**Improvements to roads in Kempapura Cheluvanarayanaswamy house road in ward no.07, Byatarayanapura.**
AGENCY	Sri. G.N Ramesh
TYPE OF MIX	BM
DATE OF TESTING	19 - 10 - 2017

Vehicle no: KA - 52 1066

Description	Trail 1	Trail 2
1. Weight of Bitumen mix taken before extraction (W1) gms	500	500
2. Weight of Bitumen mix taken after extraction (W2) gms	483.50	483.00
3. Difference in weight after extraction (W3) gms= (W1-W2)	16.50	17.00
4. Percentage of bitumen in mix = (W3/W1)* 100 (%)	3.30	3.40
5. Average in %	3.35	

RBI-Technical Services
(CONSULTANTS)

Client Representative

Contractor Representative

For RBI - Technical Services

Site Engineer

RBI - Technical Services

Road - Building - Irrigation Material Testing Laboratory
NABL Accredited Laboratory as per ISO/IEC 17025-2005
ISO 9001 - 2008 Certified

Job No:RBITS/MT/BBMP-BD/Package-02/2017-18/003 **Date:04.11.2017**

RBI- Technical Services

Aggregate Impact Value

IS: 2386 Part IV

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of the Work	Improvements to roads in Kempapura Cheluvanarayanaswamy house road in ward no.07, Byatarayanapura.
Type of Mix	**Bituminous Concrete**
Source of Sample	Hot Mix Plant
Date of Testing	**03.11.2017**

RBI-TECHNICAL SERVICES Quality Certified Bangalore

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	381	382	
2	Weight of aggregate passing 2.36 mm sieve after the test = W_2 g	83.5	84.54	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	297.48	296.98	
4	Aggregate Impact value = percent fines 100* (W_2/W_1) percent	21.92	22.13	**22.02**

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%

Note: 1) The results indicated above are based on the tests carried out on the samples received in the laboratory.

2)Any Query regarding the report must be reported immediately.

RBI -Technical Services
(CONSULTANT)
RBI-TECHNICAL SERVICES

Proprietor

Assistant Engineer

Assistant Executive Engineer
Assistant Executive Engineer
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P
Bangalore.

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd Stage, Bengaluru - 560 104.
Tel. : 080 - 23300857 Cell : 9448352709 Email : rbitc2@gmail.com Website : www.rbits.com

RBI - Technical Services

Road - Building - Irrigation Material Testing Laboratory

NABL Accredited Laboratory as per ISO/IEC 17025-2005

ISO 9001 - 2008 Certified

Job No:RBITS/MT/BBMP-BD/Package-02/2017-18/003 Date:04.11.2017

RBI- Technical Services

Aggregate Gradation Test

IS : 2386 Part I

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of the Work	Improvements to roads in Kempapura Cheluvanarayanaswamy house road in ward no.07, Byatarayanapura.
Type of Mix	**Bituminous Concrete**
Source of Sample	Hot Mix Plant
Date of Testing	**03.11.2017**

RBI-TECHNICAL SERVICES Quality Certified Bangalore.

Total Weight of Sample: **5000** gms

SIEVE SIZE, mm	Weight Retained, gm	Cummulative Weight retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grading-II specification as per MORTH
13.2	372	7.44	7.44	92.56	79 - 100	
9.5	561	11.22	18.66	81.34	70 - 88	
4.75	815	16.30	34.96	65.04	53 - 71	
2.36	647	12.94	47.90	52.10	42 - 58	
1.18	515	10.30	58.20	41.80	34 - 48	
0.600	343	6.86	65.06	34.94	26 - 38	
0.300	574	11.48	76.54	23.46	18 - 28	
0.150	461	9.22	85.76	14.24	12 - 20	
0.075	398	7.96	93.72	6.28	4 - 10	

Total Weight of Sample: **5000** gms

SIEVE SIZE, mm	Weight Retained, gm	Cummulative Weight retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grading-II specification as per MORTH
13.2	439	8.78	8.78	91.22	79 - 100	
9.5	491	9.82	18.60	81.40	70 - 88	
4.75	637	12.74	31.34	68.66	53 - 71	
2.36	583	11.66	43.00	57.00	42 - 58	
1.18	517	10.34	53.34	46.66	34 - 48	
0.600	623	12.46	65.80	34.20	26 - 38	
0.300	412	8.24	74.04	25.96	18 - 28	
0.150	387	7.74	81.78	18.22	12 - 20	
0.075	501	10.02	91.80	8.20	4 - 10	

Note: 1) The results indicated above are based on the tests carried out on the samples received in the laboratory.
2)Any Query regarding the report must be reported immediately.

RBI -Technical Services
(CONSULTANT)
RBI-TECHNICAL SERVICES

Proprietor

Assistant Engineer

Assistant Executive Engineer
Assistant Executive Engineer
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.
Bangalore.

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd Stage, Bengaluru - 560 104.
Tel. : 080 - 23300857 Cell : 9448352709 Email : rbitc2@gmail.com Website : www.rbits.com

Job No:RBITS/MT/BBMP-BD/Package-02/2017-18/003

Date:04.11.2017

RBI-TECHNICAL SERVICES Quality Certified Bangalore.

Aggregate Shape Test

IS: 2386 Part I

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of the Work	Improvements to roads in Kempapura Cheluvanarayanaswamy house road in ward no.07, Byatarayanapura.
Type of Mix	**Bituminous Concrete**
Source of Sample	Hot Mix Plant
Date of Testing	**03.11.2017**

Size of Aggregates		Weight of Fraction consisting of atleast 200 pieces, g		Thickness guage size, mm	Weight of aggregate in each fraction passing thickness guage, g		Length guage size, mm	Weight of aggregate in each fraction retained on length guage, g	
Passing through IS sieve, mm	Retained on IS sieve, mm								
63	50	W_1	0	23.9	w_1	0	--	x_1	0
50	40	W_2	0	27	w_2	0	81	x_2	0
40	25	W_3	0	19.5	w_3	0	58	x_3	0
31.5	25	W_4	0	16.95	w_4	0	--	x_4	0
25	20	W_5	0	13.5	w_5	0	40.5	x_5	0
20	16	W_6	1987	10.8	w_6	197	32.4	x_6	187
16	12.5	W_7	1387	8.55	w_7	135	25.5	x_7	157
12.5	10	W_8	789	6.75	w_8	184	20.2	x_8	100
10	6.3	W_9	243	4.89	w_9	18	14.7	x_9	27

Flakiness Index 12.12%

Elongation Index 10.69%

Combined Flakiness & Elongation Index 22.81%

Comments:

→ Maximum allowable Combined Flakiness and Elongation Index for Bituminous Concrete is 30%

RBI -Technical Services
(CONSULTANT)
RBI-TECHNICAL SERVICES

Proprietor

Assistant Engineer

Assistant Executive Engineer
Assistant Executive Engineer,
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.,
Bangalore.

RBI - Technical Services

Road - Building - Irrigation Material Testing Laboratory
NABL Accredited Laboratory as per ISO/IEC 17025-2005
ISO 9001 - 2008 Certified

Job No:RBITS/MT/BBMP-BD/Package-02/2017-18/003 **Date: 04.11.2017**

RBI TECHNICAL SERVICES Quality Certified Bangalore.

TEST REPORT

Client	:	**Executive Engineer,** **Byatarayanapura Division, BBMP.**
Name of the work	:	Improvements to roads in Kempapura Cheluvanarayanaswamy house road in ward no.07, Byatarayanapura.
Source of Sample	:	Sample Supplied by Client
Date of Testing	:	03.11.2017

The results of the tests conducted on the **CRMB 55** sample using for Bituminous Concrete collected from the contractor's plant are as follows:

Sl.No	Description	Test Result	Requirement as per IS:15462:2004 for CRMB 55
1	Penetration at 25^0c, 1/10 mm,100g.5s	55	< 60
2	Softening point, ^{0}c	58	Min. 55
3	Flash Point, ^{0}c	230	Min. 220

⇒ *The results indicated above are based on the tests carried out on the samples received in the laboratory.*

⇒ *Any Query regarding the report must be reported immediately.*

RBI -Technical Services

RBI-TECHNICAL SERVICES

Proprietor

Assistant Engineer

Assistant Executive Engineer

Assistant Executive Engineer.
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.,
Bangalore.

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd Stage, Bengaluru - 560 104.
Tel. : 080 - 23300857 Cell : 9448352709 Email : rbitc2@gmail.com Website : www.rbits.com

RBI - Technical Services

Road - Building - Irrigation Material Testing Laboratory
NABL Accredited Laboratory as per ISO/IEC 17025-2005
ISO 9001 - 2008 Certified

Job No:RBITS/MT/BBMP-BD/Package-02/2017-18/003

Date:07.10.2016

RBI- Technical Services

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of the Work	Improvements to roads in Kempapura Cheluvanarayanaswamy house road in ward no.07, Byatarayanapura.
Type of Mix	**Bituminous Concrete**
Source of Sample	Hot Mix Plant
Date of Testing	**03.11.2017 to 06.11.2017**

RBI-TECHNICAL SERVICES Quality Certified Bangalore.

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2450	2450	2450	
2	Weight of basket suspended in water	W_2 g	1220	1220	1220	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1230	1230	1230	
4	Weight of saturated surface dry aggregate in air	W_3 g	2010	2010	2020	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	780	780	790	
6	Weight of oven dried aggregate	W_4 g	2005	2007	2004	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.57	2.57	2.54	2.554
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.587	2.583	2.589	2.588
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.2%	0.15%	0.80%	0.52%

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Concrete is 2.0%

Note: 1) The results indicated above are based on the tests carried out on the samples received in the laboratory.
2)Any Query regarding the report must be reported immediately.

RBI -Technical Services
(CONSULTANT)
RBI-TECHNICAL SERVICES

Proprietor

Assistant Engineer
AE(MT)

Assistant Executive Engineer

Assistant Executive Engineer.
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.,
Bangalore.

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd Stage, Bengaluru - 560 104.
Tel. : 080 - 23300857 Cell : 9448352709 Email : rbitc2@gmail.com Website : www.rbits.com

RBI-Technical Services
Project Management Consultancy Services
Temperature Record Log Sheet

Title of the Work:	Improvements to roads in Kempapura Cheluvanarayanaswamy house road in ward no.07, Byatarayanapura.
Client:	Executive Engineer, Byatarayanapura Division, BBMP.
Agency:	Sri. G.N Ramesh
Mix Type:	BC
Date:	08/11/2017

Sl no	Tipper No.	Time	Cleaning of the Surface	Application of Tack coat	Mix Laying Temperature (C^0)	Mix Rolling Temperature (C^0)	Depth of the Mix Before Rolling(mm)	Depth of the Mix after Rolling(mm)	Remarks
1	KA·07·A·6390		✓	✓	129.5	111.0	53	40	
2	KA 52. A. 4049		✓	✓	132	112.0	53	40	
3	KA·52.5912		✓	✓	137	108.5	53	40	
4	KA·52.5553		✓	✓	133	107.0	53	40	
5	KA·52.4066		✓	✓	130	107.5	53	40	
6	*	*	*	*	*	*	*	*	*
7									
8									
9									
10									
11									
12									
13									
14									
15									

RBI-Technical Services **Client Representative** **Contractor Representative**

For RBI - Technical Services

Site Engineer

RBI-Technical Services

BITUMEN CONTENT DETERMINATION OF BITUMINOUS MIX

CLIENT	**Executive Engineer, Byatarayanapura Division, BBMP.**
NAME OF THE WORK	**Improvements to roads in Kempapura Cheluvanarayanaswamy house road in ward no.07, Byatarayanapura.**
AGENCY	Sri. G.N Ramesh
TYPE OF MIX	BC
DATE OF TESTING	08-11-2017

Vehicle no: KA -07 A 6390

Description	Trail 1	Trail 2
1. Weight of Bitumen mix taken before extraction (W1) gms	500	500
2. Weight of Bitumen mix taken after extraction (W2) gms	470.00	470.00
3. Difference in weight after extraction (W3) gms= (W1-W2)	30.00	30.00
4. Percentage of bitumen in mix = (W3/W1)* 100 (%)	6.00	6.00
5. Average in %	6.00	

RBI-Technical Services
(CONSULTANTS)

Client Representative

Contractor Representative

For RBI - Technical Services

Site Engineer

RBI-Technical Services

BITUMEN CONTENT DETERMINATION OF BITUMINOUS MIX

CLIENT	**Executive Engineer, Byatarayanapura Division, BBMP.**
NAME OF THE WORK	**Improvements to roads in Kempapura Cheluvanarayanaswamy house road in ward no.07, Byatarayanapura.**
AGENCY	Sri. G.N Ramesh
TYPE OF MIX	BC
DATE OF TESTING	08 - 11 - 2017

Vehicle no: KA 52 A 4048

Description	Trail 1	Trail 2
1. Weight of Bitumen mix taken before extraction (W1) gms	500	500
2. Weight of Bitumen mix taken after extraction (W2) gms	470.50	470.50
3. Difference in weight after extraction (W3) gms= (W1-W2)	29.50	29.50
4. Percentage of bitumen in mix = (W3/W1)* 100 (%)	5.90	5.90
5. Average in %	5.90	

RBI-Technical Services
(CONSULTANTS)

For RBI - Technical Services

Site Engineer

Client Representative

Contractor Representative

RBI-Technical Services

BITUMEN CONTENT DETERMINATION OF BITUMINOUS MIX

CLIENT	**Executive Engineer, Byatarayanapura Division, BBMP.**
NAME OF THE WORK	**Improvements to roads in Kempapura Cheluvanarayanaswamy house road in ward no.07, Byatarayanapura.**
AGENCY	Sri. G.N Ramesh
TYPE OF MIX	BC
DATE OF TESTING	08 - 11 - 2017

Vehicle no: KA 52 5912

Description	Trail 1	Trail 2
1. Weight of Bitumen mix taken before extraction (W1) gms	500	500
2. Weight of Bitumen mix taken after extraction (W2) gms	469.50	469.50
3. Difference in weight after extraction (W3) gms= (W1-W2)	30.50	30.50
4. Percentage of bitumen in mix = (W3/W1)* 100 (%)	6.10	6.10
5. Average in %	6.10	

Client Representative

Contractor Representative

RBI-Technical Services
(CONSULTANTS)

For RBI - Technical Services

Site Engineer

RBI-Technical Services

BITUMEN CONTENT DETERMINATION OF BITUMINOUS MIX

CLIENT	**Executive Engineer, Byatarayanapura Division, BBMP.**
NAME OF THE WORK	**Improvements to roads in Kempapura Cheluvanarayanaswamy house road in ward no.07, Byatarayanapura.**
AGENCY	Sri. G.N Ramesh
TYPE OF MIX	BC
DATE OF TESTING	08 - 11 - 2017

Vehicle no: KA 52 5553

Description	Trail 1	Trail 2
1. Weight of Bitumen mix taken before extraction (W1) gms	500	500
2. Weight of Bitumen mix taken after extraction (W2) gms	469.50	470.00
3. Difference in weight after extraction (W3) gms= (W1-W2)	30.50	30.00
4. Percentage of bitumen in mix = (W3/W1)* 100 (%)	6.10	6.00
5. Average in %	6.05	

RBI-Technical Services
(CONSULTANTS)

For RBI - Technical Services

Site Engineer

Client Representative

Contractor Representative

RBI - Technical Services

Road - Building - Irrigation Material Testing Laboratory
NABL Accredited Laboratory as per ISO/IEC 17025-2005
ISO 9001 - 2008 Certified

Job No:RBITS/MT/BBMP-BD/Package-02/2017-18/004 **Date:10.11.2017**

TEST REPORT

Client Name & address* : Executive Engineer, Byatarayanapura Division, BBMP.

Name of Work* : Improvements to roads in Chiranjeevi layout church road in ward no.07, Byatarayanapura.

Name of the test : Sieve Analysis

Method of test : IS : 2386 Part 1 -1963 RA-2011

Type of Aggregate : Coarse Aggregates (40mm down size)

Date of Testing : 09.11.2017

RBI-TECHNICAL SERVICES Quality Certified Bangalore.

Total Wt. of Aggregates taken in gms= **15000**

Is Sieve Size in mm	Weight Retained (gm)	Retained Weight in %	Cumulative Retained Weight in %	Cumulative Weight Passing in %	Spec.Limits as per IS 383-1970 (RA-2011)
63	0	0	0	100	100
40	488	3.25	3.25	96.75	95-100
20	4368	29.12	32.37	67.63	30-70
10	6947	46.31	78.69	21.31	10-35
4.75	2761	18.41	97.09	2.91	0-5

* Information is furnished by the Customer/Representative

Note:

1. The report shall not be reproduced, except in full, without the written approval of the laboratory.
2. The results indicated above are based on the tests carried out on the samples received in the laboratory.
3. Any Query regarding the report must be reported within 15 days from the date of testing.

RBI -Technical Services
(CONSULTANT)
RBI-TECHNICAL SERVICES

Proprietor

Assistant Engineer

Assistant Executive Engineer
Kodigehalli Sub Division.
Yelahanka Zone, B.B.M.P.
Bangalore.

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd Stage, Bengaluru - 560 104.
Tel. : 080 - 23300857 Cell : 9448352709 Email : rbitc2@gmail.com Website : www.rbits.com

RBI - Technical Services

Road - Building - Irrigation Material Testing Laboratory
NABL Accredited Laboratory as per ISO/IEC 17025-2005
ISO 9001 - 2008 Certified

Job No:RBITS/MT/BBMP-BD/Package-02/2017-18/004 **Date:15.11.2017**

TEST REPORT

Client Name & address* : Executive Engineer,
Byatarayanapura Division, BBMP.

Name of Work* : Improvements to roads in Chiranjeevi layout church road in ward no.07, Byatarayanapura.

Name of the test : Sieve Analysis

Method of test : IS : 2386 Part 1 -1963 RA-2011

Type of Aggregate : Coarse Aggregates (20mm down size)

Date of Testing : 14.11.2017

RBI-TECHNICAL SERVICES Quality Certified Bangalore.

Total Wt. of Aggregates taken in gms= **10000**

Is Sieve Size in mm	Weight Retained (gm)	Retained Weight in %	Cumulative Retained Weight in %	Cumulative Weight Passing in %	Spec.Limits as per IS 383-1970 (RA-2011)
40	0	0	0	100	100
20	470	4.70	4.70	95.30	95-100
10	5265	52.65	57.35	42.65	25-55
4.75	3570	35.70	93.05	6.95	0-10

* Information is furnished by the Customer/Representative

Note:

1. The report shall not be reproduced, except in full, without the written approval of the laboratory.
2. The results indicated above are based on the tests carried out on the samples received in the laboratory.
3. Any Query regarding the report must be reported within 15 days from the date of testing.

RBI -Technical Services
(CONSULTANT)
RBI-TECHNICAL SERVICES

Proprietor

Assistant Engineer

Assistant Executive Engineer
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.,
Bangalore.

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd Stage, Bengaluru - 560 104.
Tel. : 080 - 23300857 Cell : 9448352709 Email : rbitc2@gmail.com Website : www.rbits.com

RBI - Technical Services

Road - Building - Irrigation Material Testing Laboratory
NABL Accredited Laboratory as per ISO/IEC 17025-2005
ISO 9001 - 2008 Certified

Job No:RBITS/MT/BBMP-BD/Package-02/2017-18/004 **Date:15.11.2017**

TEST REPORT

Client Name & address* : Executive Engineer,
Byatarayanapura Division, BBMP.

Name of Work* : Improvements to roads in Chiranjeevi layout church road in ward no.07, Byatarayanapura.

Name of the test : Sieve Analysis

Method of test : IS : 2386 Part 1 -1963 RA-2011

Type of Aggregate : Fine Aggregates (Sand)

Date of Testing : 14.11.2017

RBI-TECHNICAL SERVICES Quality Certified Bangalore.

Total Wt. of Aggregates taken in gms= 500

Is Sieve Size in mm	Weight Retained (gm)	Retained Weight in %	Cumulative Retained Weight in %	Cumulative Weight Passing in %	Spec.Limits as per IS 383-1970 (RA-2011) For Zone-II
10	0	0	0	100	100
4.75	21.45	4.29	4.29	95.7	90-100
2.36	53.24	10.65	14.94	85.1	75-100
1.18	124.56	24.91	39.85	60.2	55-90
0.6	81.54	16.31	56.16	43.8	35-59
0.3	101.45	20.29	76.45	23.6	8-30
0.15	87.46	17.49	93.94	6.1	0-10

* Information is furnished by the Customer/Representative

Note:

1. The report shall not be reproduced, except in full, without the written approval of the laboratory.
2. The results indicated above are based on the tests carried out on the samples received in the laboratory
3. Any Query regarding the report must be reported within 15 days from the date of testing.

RBI -Technical Services
(CONSULTANT)
RBI-TECHNICAL SERVICES

Proprietor

Assistant Engineer

Assistant Executive Engineer
Assistant Executive Engineer
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.,
Bangalore.

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd Stage, Bengaluru - 560 104.
Tel. : 080 - 23300857 Cell : 9448352709 Email : rbitc2@gmail.com Website : www.rbits.com

RBI - Technical Services

Road - Building - Irrigation Material Testing Laboratory
NABL Accredited Laboratory as per ISO/IEC 17025-2005
ISO 9001 - 2008 Certified

Job No:RBITS/MT/BBMP-BD/Package-02/2017-18/004 **Date:17.11.2017**

TEST REPORT

Client Name & address* : Executive Engineer,
Byatarayanapura Division, BBMP.

Name of Work* : Improvements to roads in Chiranjeevi layout church road in ward no.07, Byatarayanapura.

Method of test : IS-4031 (Part -5), (Part - 4), (Part - 6) 1988 (RA-2009)

Type of Sample : Cement, OPC 43 grade

Date of Testing : 14.11.2017 to 16.11.2017

RBI-TECHNICAL SERVICES Quality Certified Bangalore.

PHYSICAL PROPERTIES

Sl.No	Name of the test	Test Results	Requirements as per IS: 8112-1989
1	Consistancy	30.50%	Not Mentioned
2	Initial Setting Time	150 minutes	Not Less than 30 Minutes
3	Final Setting Time	390 minutes	Not More than 600 Minutes
4	Compressive Strength		
	3 Days (72 hrs)	25.5 Mpa	Shall not be less than 23.0 Mpa

Note:

1. The report shall not be reproduced, except in full, without the written approval of the laboratory.
2. The results indicated above are based on the tests carried out on the samples received in the laboratory.
3. Any Query regarding the report must be reported within 15 days from the date of testing.

RBI -Technical Services
(CONSULTANT)
RBI-TECHNICAL SERVICES
Proprietor

Assistant Engineer

Assistant Executive Engineer
Assistant Executive Engineer
Kodigehalli Sub Division
Yelahanka Zone, B.B.M.P
Bangalore.

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd Stage, Bengaluru - 560 104.
Tel. : 080 - 23300857 Cell : 9448352709 Email : rbitc2@gmail.com Website : www.rbits.com

RBI - Technical Services

Road - Building - Irrigation Material Testing Laboratory
NABL Accredited Laboratory as per ISO/IEC 17025-2005
ISO 9001 - 2008 Certified

Job No:RBITS/MT/BBMP-BD/Package-02/2017-18/004

Date:05.10.2017

RBI- Technical Services

AGGREGATE IMPACT VALUE

(IS : 2386 Part - 4)

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of Work	**Improvements to roads in Chiranjeevi layout church road in ward no.07, Byatarayanapura.**
Source of Sample	**Hot Mix Plant**
Date of Testing	**04.10.2017**
Material	**Wet Mix Macadam**

RBI TECHNICAL SERVICES Quality Certified Bangalore

Description		Trails		
		1	2	3
Wt.Of stone pieces(dry) passing IS Sieve 12.5mm but retained in IS Sieve 10mm(gm)	(Wa)	322.0	323.0	322.0
Wt.Of the fraction retained in IS Sieve 2.36mm after the impact test(gm)	(Wb)	262.8	263.6	263.2
Wt.Of the fraction Passed in IS Sieve 2.36mm after the impact test(gm)	(Wc)	58.50	58.50	58.60
Aggregate Impact value (%)	(Wc/Wa)100	18.2	18.1	18.2
Average Aggregate Impact value (%)			**18.2**	
Specified Aggregate Impact value (%)			**30.0**	

RBI -Technical Services (CONSULTANT)

RBI-TECHNICAL SERVICES

Proprietor

Assistant Engineer

Assistant Executive Engineer

Assistant Executive Engineer.
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.,
Bangalore.

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd Stage, Bengaluru - 560 104.
Tel. : 080 - 23300857 Cell : 9448352709 Email : rbitc2@gmail.com Website : www.rbits.com

RBI - Technical Services

Road - Building - Irrigation Material Testing Laboratory
NABL Accredited Laboratory as per ISO/IEC 17025-2005
ISO 9001 - 2008 Certified

Job No:RBITS/MT/BBMP-BD/Package-02/2017-18/004 Date:05.10.2017

RBI- Technical Services

AGGREGATE IMPACT VALUE

(IS : 2386 Part - 4)

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of Work	**Improvements to roads in Chiranjeevi layout church road in ward no.07, Byatarayanapura.**
Source of Sample	**Hot Mix Plant**
Date of Testing	04.10.2017
Material	**Wet Mix Macadam**

RBI-TECHNICAL SERVICES Quality Certified Bangalore

Description		Trails		
		1	2	3
Wt.Of stone pieces(dry) passing IS Sieve 12.5mm but retained in IS Sieve 10mm(gm)	(Wa)	322.0	323.0	323.0
Wt.Of the fraction retained in IS Sieve 2.36mm after the impact test(gm)	(Wb)	263.0	263.8	263.5
Wt.Of the fraction Passed in IS Sieve 2.36mm after the impact test(gm)	(Wc)	58.50	58.90	58.70
Aggregate Impact value (%)	(Wc/Wa)100	18.2	18.2	18.2
Average Aggregate Impact value (%)		**18.2**		
Specified Aggregate Impact value (%)		**30.0**		

RBI -Technical Services (CONSULTANT)

RBI-TECHNICAL SERVICES

Proprietor

Assistant Engineer
AE(Mat)

Assistant Executive Engineer

Assistant Executive Engineer
Kodigehalli Sub Division
Yelahanka Zone, B.B.M.P.,
Bangalore.

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd Stage, Bengaluru - 560 104.
Tel. : 080 - 23300857 Cell : 9448352709 Email : rbitc2@gmail.com Website : www.rbits.com

RBI - Technical Services

Road - Building - Irrigation Material Testing Laboratory
NABL Accredited Laboratory as per ISO/IEC 17025-2005
ISO 9001 - 2008 Certified

Job No:RBITS/MT/BBMP-BD/Package-02/2017-18/004 Date:05.10.2017

RBI- Technical Services

GRADATION FOR WMM
MORTH TABLE-400-11

Name of the Work	Improvements to roads in Chiranjeevi layout church road in ward no.07, Byatarayanapura.
Client	Executive Engineer, Byatarayanapura Division, BBMP.
Source of Sample	Hot Mix Plant
Date of Testing	04.10.2017
Material	WMM

RBI-TECHNICAL SERVICES Quality Certified Bangalore.

Oven dry Wt.(gms) **10000**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	395	3.95	3.95	96.05	95-100
22.4	3190	31.9	35.9	64.2	60-80
11.2	1600	16	51.9	48.2	40-60
4.75	1490	14.9	66.8	33.3	25-40
2.36	1005	10.05	76.8	23.2	15-30
0.600	835	8.35	85.2	14.9	8-22
0.075	770	7.7	92.9	7.2	0-8

Note: 1) The results indicated above are based on the tests carried out on the samples received in the laboratory.

2)Any Query regarding the report must be reported immediately.

RBI -Technical Services
(CONSULTANT)

RBI-TECHNICAL SERVICES

Proprietor

Assistant Engineer

Assistant Executive Engineer

Assistant Executive Engineer.
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.,
Bangalore.

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd Stage, Bengaluru - 560 104.
Tel. : 080 - 23300857 Cell : 9448352709 Email : rbitc2@gmail.com Website : www.rbits.com

RBI - Technical Services

Road - Building - Irrigation Material Testing Laboratory
NABL Accredited Laboratory as per ISO/IEC 17025-2005
ISO 9001 - 2008 Certified

Job No:RBITS/MT/BBMP-BD/Package-02/2017-18/004 Date:05.10.2017

RBI- Technical Services

GRADATION FOR WMM
MORTH TABLE-400-11

Name of the Work	Improvements to roads in Chiranjeevi layout church road in ward no.07, Byatarayanapura.
Client	Executive Engineer, Byatarayanapura Division, BBMP.
Source of Sample	Hot Mix Plant
Date of Testing	04.10.2017
Material	WMM

RBI-TECHNICAL SERVICES Quality Certified Bangalore.

Oven dry Wt.(gms) **10000**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	460	4.6	4.6	95.40	95-100
22.4	3120	31.2	35.8	64.2	60-80
11.2	1585	15.85	51.7	48.4	40-60
4.75	1500	15	66.7	33.4	25-40
2.36	955	9.55	76.2	23.8	15-30
0.600	830	8.3	84.5	15.5	8-22
0.075	760	7.6	92.1	7.9	0-8

Note: 1) The results indicated above are based on the tests carried out on the samples received in the laboratory.
2)Any Query regarding the report must be reported immediately.

RBI -Technical Services
(CONSULTANT)
RBI-TECHNICAL SERVICES

Proprietor

Assistant Engineer

Assistant Executive Engineer
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.,
Bangalore.

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd Stage, Bengaluru - 560 104.
Tel. : 080 - 23300857 Cell : 9448352709 Email : rbitc2@gmail.com Website : www.rbits.com

RBI - Technical Services
Road - Building - Irrigation Material Testing Laboratory
NABL Accredited Laboratory as per ISO/IEC 17025-2005
ISO 9001:2008 Certified
2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd Stage, Bengaluru - 560 104.
Tel. : 080 - 23300857 Cell : 9448352709 Email : rbitc2@gmail.com Website : www.rbits.com

Job No:RBITS/MT/BBMP-BD/Package-02/2017-18/004

Date:05.10.2017

Aggregate Shape Test
IS: 2386 Part I

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of the Work	Improvements to roads in Chiranjeevi layout church road in ward no.07, Byatarayanapura.
Type of Mix	**WMM**
Source of Sample	Hot Mix Plant
Date of Testing	**04.10.2017**

Size of Aggregates		Weight of Fraction consisting of atleast 200 pieces, g		Thickness guage size, mm	Weight of aggregate in each fraction passing thickness guage, g		Length guage size, mm	Weight of aggregate in each fraction retained on length guage, g	
Passing through IS sieve, mm	Retained on IS sieve, mm								
63	50	W_1	0	23.9	w_1	0	--	x_1	0
50	40	W_2	0	27	w_2	0	81	x_2	0
40	25	W_3	0	19.5	w_3	0	58	x_3	0
31.5	25	W_4	0	16.95	w_4	0	--	x_4	0
25	20	W_5	2210	13.5	w_5	145	40.5	x_5	155
20	16	W_6	1750	10.8	w_6	135	32.4	x_6	125
16	12.5	W_7	895	8.55	w_7	125	25.5	x_7	115
12.5	10	W_8	700	6.75	w_8	100	20.2	x_8	90
10	6.3	W_9	155	4.89	w_9	15	14.7	x_9	15

Flakiness Index 9.11%
Elongation Index 8.76%
Combined Flakiness & Elongation Index 17.86%

Comments:
→ Maximum allowable Combined Flakiness and Elongation Index for Bituminous Concrete is 30%

RBI -Technical Services
(CONSULTANT)
RBI-TECHNICAL SERVICES
Proprietor

Assistant Engineer

Assistant Executive Engineer
Assistant Executive Engineer,
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.,
Bangalore.

RBI - Technical Services
Road - Building - Irrigation Material Testing Laboratory
NABL Accredited Laboratory as per ISO/IEC 17025-2005
ISO 9001:2008 Certified
2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd Stage, Bengaluru - 560 104.
Tel. : 080 - 23300857 Cell : 9448352709 Email : rbitc2@gmail.com Website : www.rbits.com

Job No:RBITS/MT/BBMP-BD/Package-02/2017-18/004

Date:05.10.2017

Aggregate Shape Test
IS: 2386 Part I

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of the Work	Improvements to roads in Chiranjeevi layout church road in ward no.07, Byatarayanapura.
Type of Mix	**WMM**
Source of Sample	Hot Mix Plant
Date of Testing	**04.10.2017**

Size of Aggregates		Weight of Fraction consisting of atleast 200 pieces, g		Thickness guage size, mm	Weight of aggregate in each fraction passing thickness guage, g		Length guage size, mm	Weight of aggregate in each fraction retained on length guage, g	
Passing through IS sieve, mm	Retained on IS sieve, mm								
63	50	W_1	0	23.9	w_1	0	--	x_1	0
50	40	W_2	0	27	w_2	0	81	x_2	0
40	25	W_3	0	19.5	w_3	0	58	x_3	0
31.5	25	W_4	0	16.95	w_4	0	--	x_4	0
25	20	W_5	2020	13.5	w_5	135	40.5	x_5	125
20	16	W_6	1695	10.8	w_6	120	32.4	x_6	115
16	12.5	W_7	800	8.55	w_7	100	25.5	x_7	100
12.5	10	W_8	705	6.75	w_8	105	20.2	x_8	95
10	6.3	W_9	100	4.89	w_9	5	14.7	x_9	5

Flakiness Index 8.74%
Elongation Index 8.27%
Combined Flakiness & Elongation Index 17.01%

Comments:
→ Maximum allowable Combined Flakiness and Elongation Index for Bituminous Concrete is 30%

RBI -Technical Services
(CONSULTANT)
RBI-TECHNICAL SERVICES
Proprietor

Assistant Engineer
AE(NR)

Assistant Executive Engineer
Assistant Executive Engineer,
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.
Bangalore.

RBI - Technical Services

Road - Building - Irrigation Material Testing Laboratory
NABL Accredited Laboratory as per ISO/IEC 17025-2005
ISO 9001 - 2008 Certified

Job No:RBITS/MT/BBMP-BD/Package-02/2017-18/004 **Date: 07.10.2017**

RBI-TECHNICAL SERVICES Quality Certified Bangalore.

RBI- Technical Services

ATTERBERG LIMITS TEST FOR WMM
MORTH TABLE-400-13

Client	:	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of Work	:	Improvements to roads in Chiranjeevi layout church road in ward no.07, Byatarayanapura.
Source of Sample	:	Hot Mix Plant
Date of Sample Testing	:	**04.10.2017 to 06.10.2017**
Material	:	**WMM**

Sl. No.	Name of Test	Test Method	Test Results
1	Liquid Limit	IS : 2720-1985 Part 5 RA : 2010	22.50%
3	Plasticity index	IS : 2720-1985 Part 5 RA : 2010	NP

Remarks:

1 Results relate only to the sample (s) under test in as received condition and applicable parameter (s).
2 The sample will be stored upto one month from the date of issue of test report unless otherwise specified.

RBI -Technical Services
(CONSULTANT)
RBI-TECHNICAL SERVICES

Proprietor

Assistant Engineer
AE(W2)

Assistant Executive Engineer
Assistant Executive Engineer
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.
Bangalore.

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd Stage, Bengaluru - 560 104.
Tel. : 080 - 23300857 Cell : 9448352709 Email : rbitc2@gmail.com Website : www.rbits.com

RBI - Technical Services

Road - Building - Irrigation Material Testing Laboratory
NABL Accredited Laboratory as per ISO/IEC 17025-2005
ISO 9001 - 2008 Certified

Job No:RBITS/MT/BBMP-BD/Package-02/2017-18/004 Date: 07.10.2017

RBI- Technical Services

ATTERBERG LIMITS TEST FOR WMM
MORTH TABLE-400-13

RBI-TECHNICAL SERVICES Quality Certified Bangalore.

Client	:	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of Work	:	Improvements to roads in Chiranjeevi layout church road in ward no.07, Byatarayanapura.
Source of Sample	:	Hot Mix Plant
Date of Sample Testing	:	**04.10.2017 to 06.10.2017**
Material	:	**WMM**

Sl. No.	Name of Test	Test Method	Test Results
1	Liquid Limit	IS : 2720-1985 Part 5 RA : 2010	23.00%
3	Plasticity index	IS : 2720-1985 Part 5 RA : 2010	NP

Remarks:

1 Results relate only to the sample (s) under test in as received condition and applicable parameter (s).
2 The sample will be stored upto one month from the date of issue of test report unless otherwise specified.

RBI -Technical Services
(CONSULTANT)
RBI-TECHNICAL SERVICES
Proprietor

Assistant Engineer

Assistant Executive Engineer
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.
Bangalore.

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd Stage, Bengaluru - 560 104.
Tel. : 080 - 23300857 Cell : 9448352709 Email : rbitc2@gmail.com Website : www.rbits.com